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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/790,959	03/01/2004	Takemori Takayama	03773/LH	2156

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FRISHAUF, HOLTZ, GOODMAN & CHICK, PC  
220 Fifth Avenue  
16TH Floor  
NEW YORK, NY 10001-7708

EXAMINER
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YEE, DEBORAH

ART UNIT	PAPER NUMBER
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1793

MAIL DATE	DELIVERY MODE
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12/18/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/790,959

**Applicant(s)**

TAKAYAMA, TAKEMORI

**Examiner**

Deborah Yee

**Art Unit**

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12, 20-23 and 25-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12, 20-23 and 25-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 November 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
- Paper No(s)/Mail Date 10-16-07.

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Claim 1 recites "a total amount of 0.2 to 2.0 wt% of one or more alloy elements selected from the group consisting of V, Ti, Zr, Nb, Ta and Hf; wherein 0.4 to 4.0% by volume of carbides, nitrides and carbonitrides of said alloy elements having an average particle diameter of 0.2 to 5  $\mu$ m are dispersed", and then recites "the martensite parent phase has a soluble carbon concentration of 0.3 to 0.8 wt%, and said carbides in an amount of 0.4 to 4.0% by volume". Claim 1 is indefinite because carbides, nitrides and carbonitrides recite a range of 0.4 to 4.0 vol% but then recites "**said** carbides in an amount of 0.4 to 4.0% by volume".

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 to 12 and 20 to 23 and 25 to 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over European patent 950,723 (hereinafter EP'723) for the reasons set forth in the previous office action dated June 19, 2007.

***Response to Arguments***

6. Applicant's arguments filed October 16, 2007 have been fully considered but they are not persuasive.

7. It was submitted that Examiner's office action stated that a Cr concentration of 2.5 to 10 wt% in the cementite is not taught by EP'723. Upon further review, EP'723 in paragraph [0035] does teach Cr in an amount of 0.5 wt% or more is concentrated in cementite in order to make cementite finer in size.

8. Although prior art does not teach prior austenite grain having an ASTM grain size No. 10 as recited by claim 3, such would not be a patentable distinction since it is merely an intermediate property to make a final product.

9. EP'723 does not teach induction heating and at a rate of 150C/sec as recited one or more of the claims, but selection of heating means would be a matter of choice well within the skill of the artisan and productive of no new and unexpected results.

10. EP'723 does not teach soluble carbon concentration of 0.3 to 0.8% in the martensite of the quench hardened layer as recited by one or more of the claims but such property would be expected since composition and other properties and process of making are closely met, and in absence of proof to the contrary.

11. Applicant stated that EP'723 is obtained in such a way that a fine nitrides and/or carbonitride having an average grain size of 0.3  $\mu\text{m}$  or less is dispersed in the contact surface structure by carburizing and nitriding. After cementite of 3  $\mu\text{m}$  or less is dispersed in the surface structure while heating in a temperature region from the A1 temperature to 900C, a quenching treatment is performed on the rolling element. Under the heat conditions for dispersing the cementite, since heating is performed in a carbon concentration range where austenite and cementite coexist, it is clear that the carbon concentration in a martensite after quenching does not exceed the eutectoid carbon concentration of the alloy (i.e., 0.8 wt%C). It is the Examiner's position that this is merely Applicant's statement without any convincing evidence (test data). Moreover, even if carbon concentration is 0.8 wt% in the martensite, such amount would be within the claimed soluble carbon concentration of 0.3 to 0.8% recited by the claims. It should be pointed out that Applicant also teaches heating to A1 temperature or higher prior to quenching, see claim 9.

12. Applicant stated that EP'723 teaches nitriding treatment such that 0.4 to 2.5% N is diffused in the contact surface structure of the rolling element. It is the Examiner's position that nitrides are not excluded from Applicant's claims. Moreover, claim 1 of EP'723 teaches nitrides as optional in martensitic surface structure.

### ***Conclusion***

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deborah Yee whose telephone number is 571-272-1253. The examiner can normally be reached on monday-friday 6:00 am-2:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Deborah Yee/  
Primary Examiner  
Art Unit 1793

/DY/